Sunday, December 8, 2002

10:00 am - 4:45 pm — **Registration** — ***Pre-Function Area***

10:00 am - 4:45 pm — **Vendor Exhibits** — ***Suite I/II/III***

1:00 pm - 1:45 pm — **Welcome and Opening Remarks** — ***Colorado Ballroom E/F***

Sarah V. Hart — **Director of NIJ, U.S. Department of Justice**

1:45 pm - 2:45 pm — **Keynote Address** — ***Colorado Ballroom E/F***

John W. Suthers — **U.S. Attorney, District of Colorado**

2:45 pm - 3:15 pm — Break

3:15 pm - 4:45 pm — **Showcase Session** — ***Suite V/VI***

3:15 pm - 4:45 pm — **Workshops**

Crime Analysis, Crime Mapping, and the Web — *Salon A/B*

Presenters

Rachel L. Boba — **Police Foundation**
and
Mary Velasco — **Police Foundation**

Crime Analysis, Crime Mapping, and the Web
As more police departments post crime analysis and mapping information on the Internet and intranets, the need for guidelines on posting grows. This workshop shows how to post timely, accurate, and useful information in a professional manner. The session is oriented toward police professionals responsible for creating and posting the crime analysis and crime mapping information and toward police administrators responsible for the impact of publishing that information. Information confidentiality and address specificity in crime mapping will be discussed throughout the workshop.

Digital Mapping — *Salon C/D*

Presenters

Melinda K. Higgins — **Georgia Tech Research Institute**
and
Michael L. Thomas — **U.S. Department of Defense**

National Guard Digital Mapping Server Portal: National GIS Integration and Mapping Support
(Melinda Higgins, Michael Thomas, John Breckenridge, Nick Faust, Kevin Shaw, Ramachandra Sivakumar, Ruth Wilson)
The National Guard Bureau–Counterdrug Office (NGB-CD), through its Counterdrug Geographical Regional Assessment Sensor System (CD-GRASS) program, has incorporated many technologies, including a Digital Mapping Server (DMS) portal. This session introduces the DMS portal and shows attendees how to use it in their own operations at no cost. The DMS portal ties many disparate GIS databases together in a single interface with the capability to perform projection translation on the fly. The DMS portal is a joint effort between the Naval Research Lab at Stennis Space Center, Georgia Institute of Technology, and the NGB-CD.

Mapping Investigative Strategies: An Analytical Approach — *Salon G/H*

Presenters

Anthony Bouwmeester — **Edmonton Police Service**
and
William Brown — **Edmonton Police Service**

Mapping Investigative Strategies: An Analytical Approach
In Intelligence-Led Policing (ILP), intelligence guides operations, creating actionable response options, rather than the reverse. In practicing ILP, the Edmonton Police Service (EPS) Intelligence Analysis Unit creates products that guide decisionmaking, and it applies sequential processes of analysis during investigations and projects. Using real examples, this workshop shows how the EPS uses GIS mapping to provide valuable analytical assistance to field investigators from the onset of an occurrence, thus enhancing deployment of investigative strategies and personnel.

SpaceStat — *Salon I/J*

Presenters

Gaston Pezzuchi — **Buenos Aires Province Police Department**

Spatial Statistics Applied to Police Confrontations: An Argentinean Data-Set
This presentation applies spatial statistics techniques to the analysis of a sample data set of real-life police shootings, complementing the concepts and ideas being explained in the Spatial Statistics workshop. The techniques depicted include descriptive spatial analysis, centrographic statistics, kernel density interpolations, and some rudimentary journey-to-crime estimations. The session uses the results of a research study conducted in Argentina regarding police confrontations.

Sanjeev Sridharan — **Westat**

SpaceStat
This workshop describes applications of spatial econometrics using SpaceStat. The focus is on both exploratory and confirmatory spatial data analysis techniques. The workshop addresses the following: creating spatial weights using SpaceStat; implementing Local Moran scatter plots and Local Moran significance maps using SpaceStat; and using confirmatory models, including the spatial lag, spatial error, and spatial regimes models. The examples focus on models of juvenile violent crime rates in Virginia.

Updating Internet Research Skills — *Suite IV*

Presenters

William A. Ballweber — **U.S. Department of Justice**
and
Scott Hertzberg — **National Criminal Justice Reference Service**

Internet Web Skills Training and Electronic Resources
The first part of this session, "Search Engines/Techniques, Web Resources & Tools," is geared for intermediate Web users. It discusses how to select a search engine, how to evaluate search results, and how to improve Internet search skills. The second part of this session, "The Invisible Web—Databases for Detectives," provides information on a variety of information databases, both free and fee-based. The tips in this session are useful for both crime research and law enforcement planning.

What is GIS? — *Mattie Silks*

Presenter

Mark A. Stallo — **Dallas Police Department**

What is a Geographic Information System (GIS) and How Does One Get Started?
This one and a half hour introductory presentation covers the basic components of a GIS and how to obtain them by working with other governmental and private organizations. In addition, the presentation explores emergency preparedness, police deployment and investigations, problem solving, global positioning, data sharing across criminal justice agencies, and other topics.

4:45 pm - 6:00 pm **Crime Map Competition and Awards Ceremony** — ***Colorado Ballroom E/F***

Monday, December 9, 2002

8:00 am - 5:00 pm — **Registration** — ***Pre-Function Area***

8:00 am - 5:00 pm — **Vendor Exhibits** — ***Suite I/II/III***

8:30 am - 11:30 am — **Showcase Session** — ***Suite V/VI***

8:30 am - 11:30 am — **Workshops**

Basics of Cartography — *Salon A/B*

Presenter

James L. LeBeau — **Southern Illinois University at Carbondale**

Basics of Cartography

The adoption and implementation of GIS and automated mapping in criminal justice has been phenomenally rapid. During the rush to get mapping started, new users have been focused on the technology of making maps (e.g., how to get the computer to make a map) while ignoring the science and art of making a map. This workshop discusses and illustrates the important basics of cartography. Discussion topics include the elements of a map; generalization and scale; coordinate systems and projections; symbols and visual variables; color design; and different types of thematic maps.

Environmental Criminology GIS — *Salon C/D*

Presenters

Patricia L. Brantingham — **Simon Fraser University**
and
Paul J. Brantingham — **Simon Fraser University**

From Theory to Practice

This session addresses the importance of understanding the theory of criminal events and the spatial-temporal patterning of crimes. Understanding theory helps analysts identify problems, select appropriate questions, specify research issues, and interpret results. The session presents the basics of environmental criminology, emphasizing pattern theory, routine activities, crime event theory, criminality of place, and the importance of understanding the mobility and movement patterns of offenders and victims or targets.

Federal Geographic Data Committee Metadata Standards — *Salon G/H*

Presenter

Frederick R. Broome — **U.S. Census Bureau**

Geographic Data Standards: The Key to Rapid and Accurate Crime Mapping Services

Increasingly, law enforcement agencies must ingest data from a wide variety of sources, respond to more complex emergencies, and disseminate data to their operating units, as well as the media and the public,

almost immediately. The key to rapid data exchange and accurate use of the data is the development and implementation of data standards. This presentation describes what is being done in the field of geographic data standards development and tells how standards may facilitate crime mapping and analysis.

Introduction to CrimeStat II — *Salon I/J*

Presenters

Richard Block — **Loyola University**
and
Ned Levine — **Ned Levine & Associates**

Introduction to CrimeStat II
This workshop for intermediate GIS users presents an introduction to CrimeStat II, a spatial statistics program for the analysis of crime incident locations. The program can interface with most desktop GIS packages and can calculate statistics from the distribution of incidents and write objects to GIS packages. This session shows how easy it is to set up and use the program and suggests appropriate law enforcement and criminal justice applications. CrimeStat II is a free application.

Advanced Technical Issues — *Suite IV*

Presenter

Ronald E. Wilson — **University of Michigan/MAPS Program**

Spatial Databases and Warehouses: Concepts and Structures
The first half of this workshop examines the details and characteristics of spatial data and databases, including the ways in which spatial data is stored, represented, and processed. The second half examines the ways in which spatial data is stored and accessed in data warehouses. Both parts of the workshop use examples from law enforcement and criminal justice information systems.

Tactical/Investigative Analysis of Targeted Crimes — *Mattie Silks*

Presenters

Julie Cooper — **Irvine Police Department**
and
Michael Ronczkowski — **Miami-Dade Police Department**

Tactical/Investigative Analysis of Targeted Crimes
This workshop exposes analysts to techniques for proactive, real-time, tactical/investigative analysis and mapping of targeted (UCR Part I) crimes. Using a macro-micro-macro continuum (or "Loop Effect"), analysts can conduct virtually any tactical/investigative analytical assignment. Weighting and types of variables are discussed, as are standardization of analytical practices, data collection, knowing the data and available resources, and use of analytical support. Two real-world cases are described to illustrate the effectiveness of the process in tactical crime mapping.

11:30 am - 12:00 pm	**Break**

12:00 pm - 1:15 pm **Luncheon and Keynote Speaker** ***Colorado Ballroom E/F***

Jerry Ratcliffe **New South Wales Police College**

Bridging the Research-to-Practice Gap, or, From the Ivory Tower to the Mean Streets
This presentation examines how crime mapping innovations can filter from the ivory tower of academia through the office of the crime analyst to finally influence street-level policing operations. It uses geographic profiling and aoristic analysis to explain how academics can deliver functional techniques to analysts and how analysts can influence academic research. The maps, animation, and details used in the presentation will be available on the Internet afterwards.

1:15 pm - 1:30 pm **Break**

1:30 pm - 3:00 pm **Concurrent Panels**

Showcase Session *Suite V/VI*

Advanced Statistics *Salon A/B*

Presenters

Wim Bernasco **Netherlands Institute for the Study of Crime and Law Enforcement**

Using Random Utility Maximization Models to Explain Location Choice of Offenders
A theory of location choice of criminal activities attempts to explain why motivated offenders commit crimes at the places they do, instead of elsewhere. This paper argues that the integration of random utility maximization theory and the (statistical) conditional logit model makes it possible to test simultaneously both location-based and offender-based factors, without assuming a random spatial distribution of either criminal opportunities or offenders. The project hypothesizes that for each individual the probability of choosing a particular neighborhood is a positive function of the wealth of the neighborhood, the absence of effective guardianship in the neighborhood, and the proximity of the neighborhood to his own neighborhood.

Dan Helms **National Law Enforcement and Corrections Technology Center**

Static Forecasting Methods: What Works and What Doesn't
This paper concentrates on static, rather than dynamic, predictive methods, using GIS to perform tactical forecasting. It begins with a brief overview of six methods commonly used by crime analysts today: Distribution Rectangles, Minimum Convex Polygons, Jennrich/Turner Ellipses, Harmonic Density Threshold Polygons, Nearest Neighbor Threshold Polygons, and Arbitrary Approximation. It then explores the statistical and theoretical validity of those techniques and evaluates their practical success at predicting future event locations within a crime series.

J. Andrew Ware — **University of Glamorgan**

Predicting the Geo-Temporal Variations of Crime and Disorder
Forecasting the temporal geography of crime facilitates the effective deployment of police resources. This session introduces the first stage of a computerized system for forecasting crime incidents by focusing on areas that may transcend traditional policing boundaries. The computerized procedure uses a geographical crime incidence-scanning algorithm to identify clusters with relatively high levels of crime (hot spots). These clusters provide sufficient data for training artificial neural networks capable of modeling trends within them.

Geographic Profiling I — *Salon C/D*

Presenters

Richard Z. Gore — **University of Massachusetts at Lowell**

Use and Effectiveness of Distance-Decay Curves and Incident Based Offender Residence Probability Surfaces in Ranking an Offender on a Randomly Generated Suspect List
(Richard Z. Gore, Kenneth V. Griffiths, Nicholas J. Tofiluk)
This presentation describes the results obtained by using simulation software designed to indirectly determine the predictive value inherent in the geographic information derived from arrest records. A simulated suspect list containing the perpetrator can be generated for any incident randomly drawn from the database, and geographic filters can be used or not. The results indicate a high utility value in the three geographic filters used. The study has implications for the formulation of administrative policies that prescribe the assembly and processing of suspect lists.

Brad J. Moore — **Ontario Provincial Police**

Geographic Profiling
Geographic profiling is an investigative support technique for cases of serial violent crime. To determine the most probable areas in which the offender might reside or work, the process analyzes offense locations, characteristics of the neighborhoods in which they occurred, and the psychological profile of the offender. Geographic profiling is best understood as an information management strategy that can be used to prioritize suspects and locations and to suggest new investigative tactics when traditional methods have not been successful.

Christopher G. Mowbray — **Edmonton Police Service**

Target Selection and Spatial Pattern Analysis of Serial Sexual Offenders in Edmonton, Canada
This study examines the spatial patterns of known stranger-stranger serial rapists who attacked their victims in Edmonton, Alberta, Canada. The theoretical underpinnings of this paper are found in journey-to-crime research, environmental criminology, environmental psychology, and other spatial or geography-based research. Analysis found that a small number of offenders (some “marauders,” others “commuters”) were responsible for an inordinate number of total offenses.

GIS Applications I

Salon G/H

Presenters

Spencer Chainey — **InfoTech Enterprises Europe**

New Perspectives and Developments in Crime Mapping: From Blobology and Better Partnership Working to Crime Science and Supporting Serious Crime Investigations

This paper demonstrates that new applications in crime mapping continue to emerge but are often drawn from tried and tested techniques from other disciplines. The paper shows how new applications—animations, journey-to-crime analysis, information hubs to facilitate information sharing, and geographic profiling of non-violent serial crimes—are helping in the fight against crime. The paper also discusses the need for analysts to receive "crime science" training to focus and direct their geographical crime analysis duties.

Donald R. Dixon — **California State University at Sacramento**

Hot Spots of Juvenile Violence: Using GIS to Understand Where and Who

This paper describes the use of ArcView 3.2 and the hot spot extension to assess patterns of juvenile violence over a five-year period in Dallas, TX. The data cover 1997 to 2001 and include arrests of juveniles for violent offenses. After hot spots were identified, the researcher conducted a social-ecological analysis of the areas where violent offenses by juveniles were most likely to occur and of the offenses themselves. Analysis of those patterns provides new insights into neighborhood and offender characteristics and makes possible more effective intervention, diversion, and education strategies.

Peter Schmitz — **CSIR**

Mapping Crime Levels Per Magisterial District in South Africa

(Peter Schmitz, Theo Stylianides)

South Africa is planning to right-size its courts in terms of service delivery and budget. To determine whether a court has enough resources to deal with the number of criminal cases in its jurisdiction, it was necessary to map the crime levels per magisterial district (a subdivision of a province). Police station boundaries were mapped and overlaid with magisterial boundaries. With SAS software, crime data from the South African Police Service was processed, and crime levels per magisterial district were calculated, imported into ArcView GIS, and mapped per magisterial district.

Police Fatalities

Salon I/J

Presenters

Eric S. Jefferis — **Kent State University**

County Level Analysis of Police Killed in the Line of Duty

(Eric S. Jefferis, Robert J. Kaminski)

Research on police officer safety has mainly examined risk factors at the incident and individual levels. By contrast, this study examines community structural characteristics that are correlated with police line-of-duty deaths, using 1993-1999 data. In addition, the Space and Time Scan Statistic (SaTScan) is used to identify significant clusters of police deaths, and spatial regression models identify significant multivariate relationships.

Gaston Pezzuchi — **Buenos Aires Province Police Department**

Spatial Statistics Analysis of Police Confrontations in a Large Argentinean Urban Area: Preliminary Findings

In Argentina, the last three to four years have seen a great rise in urban violence. One indicator is the increase in recorded "police confrontations" in which a police officer must use force to preserve life. This study looks at police risk, comparing the distribution of officers and the chances of being involved in a violent confrontation to aid in developing deployment and training strategies. Preliminary findings seem to contradict the notion that poor zones need some sort of seclusion to prevent violent offenders from acting, since the concentration of violent offenders is not directly related to the location of the poorer zones.

Problem-Solving — *Suite IV*

Presenters

Elizabeth R. Groff — **Institute for Law and Justice**

Modeling the Spatial Dynamics of Homicide

This paper builds on research exploring the spatial dynamics of homicide events. Previous studies have clearly demonstrated that homicide events are not randomly distributed events but rather clustered within a city. However, there is little understanding of the dynamics that bring victim and offender together. For each homicide event, the concept of "mobility triangles" is used to create a spatial typology that characterizes the relationship of the offender and victim to the place in which the crime occurred.

Mark Patrick — **InfoTech Enterprises Europe**

Proving the SARA Model: A Problem-Solving Approach to Street Crime Reduction in the London Borough of Lewisham

Like many London boroughs, Lewisham has suffered an increasing street robbery problem. This paper describes how the SARA problem-solving methodology was implemented in Lewisham, linking spatial and temporal analysis directly to the design of crime reduction initiatives. The paper further discusses attempts to continually assess progress toward the goal and describes how the initiatives were modified in light of this continual analysis and reassessment.

Thomas F. Rich — **Abt Associates Inc.**

Problem-Solving in K-12 Schools Using School COP

With NIJ funding, Abt Associates developed the School Crime Operations Package (School COP), a software package that enables school safety officers or school administrators to enter, maintain, analyze, and map school rule violations and crimes in and around schools. The application is available for free at www.schoolcopsoftware.com. This presentation provides an overview of School COP, describes the approach used to map incidents in schools, and discusses how School COP has been used as a problem-solving tool in K-12 schools.

Warehousing Data

Mattie Silks

Presenters

Jason Dalton — **University of Virginia**

Production and Deployment of GRASP: A Geospatial Repository for Analysis and Safety Planning

This presentation outlines the development and deployment of the Geospatial Repository for Analysis and Safety Planning (GRASP), a collection of spatial data from participating agencies. The project goals included the design of a prototype GRASP system in the Charlotte-Mecklenburg, NC, and Baltimore County, MD, areas. In tests, the use of GRASP reduced by four orders of magnitude the amount of time researchers and administrators had to spend collecting and distributing data. An expansion of the GRASP network would allow approved researchers to perform studies and comparative analysis over wider areas.

Janet P. Stamatel — **University of Michigan**

Using Data from the National Archive of Criminal Justice Data for Mapping and Spatial Analysis

(Janet P. Stamatel, Pamela L. Brown)

The National Archive of Criminal Justice Data (NACJD) preserves and distributes computerized crime and justice data from federal agencies, state agencies, and investigator-initiated research projects to users for secondary statistical analysis. This presentation introduces data collections that are freely available from NACJD that can be used for mapping and spatial analysis. The session also demonstrates how to find data collections of interest, how to download data from the site, and how to prepare data files for use with mapping software.

3:00 pm - 3:30 pm	**Break**

3:30 pm - 5:00 pm — **Concurrent Panels**

Showcase Session

Suite V/VI

Crime and Place

Salon A/B

Presenters

Leslie W. Kennedy — **Rutgers University**

Searching for Emergent Forms: Spatial Analysis and Crime Places

Crime mapping pattern analysis that focuses on hot spots addresses the existence but not the formation of crime places. Crime mapping and environmental criminology need to account for area transformations and must consider techniques that can describe and analyze such areas. This session introduces the idea of emergence, which looks for interactions between behavior and objects in the environment.

Nanci Plouffe — **Chula Vista Police Department**

Understanding and Preventing Auto Theft Using Geographical Information Systems
The Chula Vista (California) Police Department is currently undertaking a detailed, systematic analysis of auto crime in public parking lots. This presentation describes the methods for conducting a rigorous geographic analysis, lessons learned in Chula Vista, and best practices compiled from a U.S. Department of Justice guidebook on this subject. Also discussed are such topics as geographic focus, mapping of key existing data, special issues related to border jurisdictions, and primary data sources and analysis techniques.

GIS Applications II — *Salon C/D*

Presenters

Gregory A. Frost — **Tallahassee Police Department**

Combining GPS and GIS to Remove Criminal Anonymity
By combining GPS, GIS, and advanced data warehousing/mining techniques, a public/private partnership in Florida created the Crime Trax system, now operational in several Florida counties. The system removes anonymity from GPS-tracked offenders on court-ordered community supervision—probation, parole, or pre-trial release. Crime Trax combines GPS offender tracking data with crime data extracted directly from local law enforcement agencies. Automated analysis reveals, for example, if a tracked offender was at the scene of a reported crime; if so, the reporting law enforcement agency and the offender's probation officer are notified by automated e-mail messages.

Lakshmi Iyengar — **Maryland Department of Juvenile Justice**

Geographic Information System (GIS): A Management Tool Showing Quantitative Statistics with Six GIS Layers
This paper shows how the Maryland Department of Juvenile Justice (DJJ) uses GIS as a decision-making tool. A specific focus is placed on the city of Baltimore, which accounts for 25 percent of DJJ's total intake referrals. The presentation also shows how combining statistics and GIS layers helped management arrive at three DJJ-defined supervision districts by identifying clusters of youth in need of services.

Updating Internet Research Skills — *Salon G/H*

Presenters

William A. Ballweber — **U.S. Department of Justice**
and
Scott Hertzberg — **National Criminal Justice Reference Service**

Internet Web Skills Training and Electronic Resources
The first part of this session, "Search Engines/Techniques, Web Resources & Tools," is geared for intermediate Web users. It discusses how to select a search engine, how to evaluate search results, and how to improve Internet search skills. The second part of this session, "The Invisible Web—Databases for Detectives," provides information on a variety of information databases, both free and fee-based. The tips in this session are useful for both crime research and law enforcement planning.

Rare Events

Salon I/J

Presenters

Avinash Singh Bhati — **The Urban Institute**

Robust Spatial Analysis of Rare Crimes: Modeling Disaggregated Homicide Rates

In recent years, analysis of disaggregated homicide rates has led to a deeper understanding of the differential mechanisms leading to the generation of different "types" of homicides. Likewise, inclusion of a spatial dimension to homicide research has offered insights into the spatial dynamics of violent crime. This presentation applies new information-theoretic estimation methods to the problem of allowing spatial error-correlation in models of rare crimes, i.e., models with discrete (binary or count) outcomes such as disaggregated homicide rates measured at local (intra-city) units of spatial aggregation. The session explains the methodology and presents preliminary findings.

Kenneth Johnson — **Seattle Police Department**

Poisson Regression and GIS for Analysis of Crime Activity

Because the worst crimes occur in small numbers, the need for a better statistical mousetrap suggests use of logistic regression, a far cry from Ordinary Least Squares (OLS) methods. The concept of maximum likelihood comes into play when dealing with logit-based analyses. This session explores Poisson regression, the goal of which is to develop a predictive model that pulls out statistically valid predictor variables. The giant step that remains is whether that set of variables can be used for further identification of highly likely crime activity areas.

Research

Suite IV

Presenters

Keith Harries — **University of Maryland, Baltimore County**

Changes in Homicide and Assault in Baltimore, 1990-2000

The release of 2000 Census data provided an opportunity to conduct analysis of demographic and economic change since the last census. In this project, homicide and assault data for 1990 and 2000 were compared and differences mapped at the census tract level. Data and field information from a tract that experienced seven homicides in one arson event in October 2002 was scrutinized more closely, analyzing attributes that included cohort retention, income (adjusted for inflation), and poverty among female-headed households. Given the tract's socioeconomic experience, the increased homicide and aggravated assault rates assaults in 2000 compared 1990 are not surprising.

Hal Holzman — **U.S. Department of Housing and Urban Development**

Establishing Public Housing Authority—Police Department Crime Prevention Planning Partnerships Based on GIS

This session presents findings from a study sponsored by the U.S. Department of Housing and Urban Development in which joint crime prevention planning partnerships were established between public housing authorities (PHAs) and police departments (PDs). GIS-based crime mapping was the vehicle for bringing the PHAs and the PDs together in what was hoped would be "win-win" collaborative relationships. For six months, the project contractor used the PDs' crime data to create monthly maps of reported crimes in and around each PHA development. At each of the four sites, the PHA and PD met to examine the maps with an eye toward joint crime control planning.

Ronald E. Wilson **University of Michigan/MAPS Program**

Public Housing and Crime Intervention
Using the federal crime intervention model known as Strategic Approaches for Community Safety Initiative, Wilmington, NC, addressed serious violent crime and drug distribution in and around five public housing communities. In that strategy, the local U.S. Attorney partners with federal, state, and local criminal justice agencies, community organizations, and a research partner to address a crime problem identified within the community. This investigation explores the changes over time in the spatial distribution of violent crime within Wilmington and around the five identified public housing areas.

Spatial Data

Mattie Silks

Presenters

Tony H. Grubesic **University of Cincinnati**

Imperfect Spatial Information: Implications for Crime Mapping and Analysis
GIS has rapidly become the critical platform from which crime mapping and analysis is executed. However, analysts need to be aware of the data uncertainty and imperfection likely to be resident in a spatial database. This paper emphasizes the concepts of accuracy, precision, validity, reliability, vagueness, and ambiguity. The paper concludes by examining how uncertainty and imperfection may affect law enforcement's understanding of the spatial significance of crime patterns and ultimately policy and policing decisions.

Alan T. Murray **The Ohio State University**

Assessing the Reliability of Crime Analysis Using Imperfect Spatial Information
The spatial information used in crime analysis is far from perfect, either in locational precision or attribute accuracy. While the product of geo-coding is precise (provided that it is successful), the generated locational information may be quite a distance from the actual location of the incident. This paper illustrates how applied analytical tools and techniques may produce varied results when data uncertainty is taken into account, and it suggests approaches for assessing data uncertainty in the context of crime analysis.

International Roundtable

6:30 pm - 8:00 pm **Plenary Panel** ***Salon A/B***

Moderator

John Markovic **Vera Institute of Justice**

International Roundtable
In this roundtable, participants can network, discuss common concerns, and compare successes and challenges in crime mapping efforts in developing countries. All interested parties are welcome, but the session will be of particular interest to conference attendees from developing countries. Potential topics include the challenges of implementing crime mapping in emerging democracies; the benefits and limitations associated with highly centralized police agencies; developing partnerships between police, universities, and non-governmental organizations; guarding against using crime mapping for oppressive purposes; guarding against the use of maps to reinforce stereotypes and ethnic or class conflict; engaging citizens as participants in crime mapping; and the need for crime mapping and analysis listservs for non-English speaking participants.

Tuesday, December 10, 2002

7:30 am - 4:30 pm **Registration** ***Pre-Function Area***

7:30 am - 4:30 pm **Vendor Exhibits** ***Suite I/II/III***

8:00 am - 9:30 am **Concurrent Panels**

Showcase Session *Suite V/VI*

Exploratory *Salon A/B*

Moderator

Brett Chapman **U.S. Department of Justice**

Presenters

John R. Freeman **U.S. Department of the Treasury**

Extending GIS to Visualize Investigative Data: Some Practical Examples from the ATF
To improve crime gun tracing when serial numbers are missing, the Bureau of Alcohol, Tobacco and Firearms (ATF) is experimenting with animated maps to analyze the spatial and temporal dimensions of such gun recoveries. The first part of this presentation shows some of the initial products of those experiments. The second part discusses ways of illustrating firearms trafficking patterns on the printed page. ATF now geocodes information to non-geographic, matrix-like spaces, a technique that should work on the local as well as national scale.

Fraser Moffatt **Ottawa Police Service**

Determination of Input Variables and Their Parameters for the Use of the Weights-of-Evidence Model for the Spatial Prediction of Residential Break-and-Enters in Ottawa
This paper investigates the links between space, place, and crime with respect to criminal ecology and the geography of crime. It uses the weights-of-evidence predictive model to determine the amount of influence that space and place has with the occurrence of residential break-and-enters in urban residential neighborhoods of Ottawa, Ontario. The research examines the validity of "known" leading indicators of residential break-and-enters, and it attempts to determine the spatial threshold beyond which any of those indicators no longer carry any statistically significant influence on the occurrence of residential break-and-enters.

Takahito Shimada **National Research Institute of Police Science**

Spatial Diffusion of Residential Burglaries in Tokyo: Using Exploratory Spatial Data Analysis
(Takahito Shimada, Yutaka Harada, Mamoru Suzuki)
This session describes the use of Exploratory Spatial Data Analysis (EDSA) to examine the spatial diffusion of residential burglaries and breaking and entering in Tokyo from 1996 to 2000. Burglary rates for specific house types were calculated, hot spots were determined, and the migration of hot spots around the city and suburbs was tracked.

Geocoding

Salon C/D

Presenters

Tom Casady — **Lincoln Police Department**

Parcels and Policing: Using Assessors' Databases in Crime Mapping
This presentation discusses the availability of and uses for land parcel data. Many law enforcement agencies are unaware of the rich resources located in the offices of county assessors. Using parcel data can dramatically assist crime mapping, analysis, and research. The presentation is aimed primarily at police crime analysts who use centerline street files as the essential layer in their basemaps and who are not entirely familiar with parcel layers and their potential uses.

Kenneth Johnson — **Seattle Police Department**

Geocoding Tricks
The crime analysis officer or civic official wanting to track crime activity with the aid of GIS depends on the systems person who geocodes data from misspelled, misnumbered, crumpled hard-copy reports. To reach a 99 percent hit rate takes cleverness, patience, and software compatibility—as well as preprocessing with MapBasic commands, Avenue scripts, Access/VBA macros/scripts, and a solid list of common place names. In general, the geocoder needs an expert system embedded in a thoroughly debugged parser and some sound/voice recognition capabilities. This presentation provides a look at the state of that art and solicits suggestions for improving geocoding engines.

Andreas M. Olligschlaeger — **TruNorth Data Systems, Inc.**
and
Ed Stely — **U.S. Department of the Treasury**

Automated Enterprise-Wide Geocoding: ATF eTrace and the Universal Geocoding Repository
This presentation examines challenges associated with automating the address matching and geocoding process at the enterprise level. Issues include database trigger-level address matching, Web-based address verification, address pre-processing, geodata warehousing, system architectures, code reusability, and regional variations in address standards. One example of enterprise-wide geocoding is the Universal Geocoding Repository being developed to support eTrace, a Web-based application of the Bureau of Alcohol, Tobacco and Firearms to support trace requests for recovered firearms used in crimes.

International Mapping

Salon G/H

Presenters

Jaishankar Karuppannan — **University of Madras**

Patterns of Crimes of Communal Violence and Terrorism in Coimbatore City: A GIS Analysis in India
(Jaishankar Karuppannan, Balamurugan Venkatesh)
This study examines two episodes of communal violence; one cost several lives and millions of rupees, and the other turned into communal terrorism, including bomb blasts that killed several people. GIS and spatial analysis were used to identify the relationships between population, land use, literacy, urbanization, and crimes of communal violence and terrorism. The study attempts to explain crimes of communal violence and terrorism and to discern policy-making implications to prevent such violence in the future.

Peter Schmitz **CSIR**

Using Satellite Imagery, Digital Orthophotos, and GPS in Crime Mapping in South Africa
(Peter Schmitz, Antony Cooper, Geoffrey Quick)
South Africa, like many developing countries, has informal settlements on the fringes of some towns and cities. Maps of those areas generally do not exist, making it difficult for authorities to plan for or work in those settlements. Increasingly, technologies such as digital orthophotographs, high-resolution satellite imagery, and GPS are being used for such areas to provide base mapping and application data for GIS. The CSIR has helped the South African Police Service and other authorities map crimes and other incidents in those areas for detecting and preventing crime.

Sean Sutter **U.S. Department of State**

Andean Connection: Illicit Crop Detection, Eradication, and Drug Interdiction in the Andean Region
This presentation showcases the GIS and remote sensing processes and equipment used by the U.S. Department of State, Bureau of International Narcotics and Law Enforcement, host nation law enforcement, and other agencies to detect and locate concentrations of illicit crops (particularly coca and poppy) for purposes of eradication and interdiction in South America. Multispectral imagery is obtained from various platforms to conduct spectral analysis and determine locations of large amounts of cultivation. Imagery is used for eradication mission planning and to determine the location of airfields and drug labs for interdiction mission planning.

Offender Travel Behavior *Salon I/J*

Presenters

Richard Block **Loyola University**

Place, Space, and Crime Revisited: Targets and Offenders Converge in Violent Index Offenses in Chicago
(Richard Block, Darryl Brice, Aneta Galary)
This research measures the distances traveled by victim and offender to their meeting in a violent crime. Records of all UCR Index criminal sexual assaults, robberies, and aggravated assaults recorded by the Chicago Police in 1998 are analyzed. Little evidence is found for a buffer area of reduced crime around the home address of the offender. Offenders who have some prior knowledge of the victim are much more likely to attack close to their own home and that of the victim than offenders who had no previous relationship to the victim.

Dan Helms **National Law Enforcement and Corrections Technology Center**

Criminal Movement Pattern Detection
This session contrasts traditional static point-pattern analysis of distributions with dynamic, sequential event analysis to discern how offenders choose neighborhoods based on their spatial references and characteristics. Breaking down a series of events by sequence can demonstrate spatio-temporal patterns that are quite different and often more predictively reliable than those reached through static statistical methods. The session also explains the role of modus operandi evolution and mission creep in the offender's choices of target location. Lessons are illustrated by examples from actual, recent crime series on which dynamic forecasting methods have proven successful.

Ned Levine **Ned Levine & Associates**

Modeling Metropolitan Criminal Travel Behavior
This session presents a theoretical framework for analyzing offender travel behavior in a metropolitan area. For each zone in the area, two models are developed: a model of crime trip productions and a model of crime trip attractions. The calibrated model can be used for prediction by applying future values of the variables predicting productions and attractions. This type of model can help police understand criminal travel behavior and conduct strategic planning.

Spatial Research I *Suite IV*

Presenters

Kim S. Hunt **DC Advisory Commission on Sentencing**

Crime Mapping of Public Opinion about Punishment and Criminal Sentencing Policy
The presentation provides an argument for spatial analysis of public opinion data on attitudes toward crime and punishment. Public attitudes toward criminal sentencing policy, particularly the use of incarceration, are complex and require careful survey design and question wording. No study of spatial variation in citizen attitudes toward sentencing policy exists, but a spatial dimension to public attitudes about crime and punishment seems likely.

Tess McCarthy **New South Wales Police College**

Measuring Displacement in City-Wide Police Crackdowns
(Tess McCarthy, Jerry Ratcliffe)
Crime mapping can now help dispel the common myth that a police crackdown simply displaces crime, but what can be done when the police crackdown is city-wide? How can one measure displacement within a city? This paper explains a new technique that uses a Monte Carlo simulation of a random-point nearest neighbor analysis to solve the problem. The presentation illustrates the use of the technique to answer the question, "Did a police city-wide burglary crackdown cause displacement of burglary activity in Canberra, Australia?"

Justin Ready **Police Foundation**

Geographic Analysis of Crime Displacement and Diffusion of Crime Control Benefits in Jersey City, New Jersey
(Justin Ready, John Eck, David Weisburd)
Crime displacement is seldom a primary subject of empirical study in field experiments. This paper, however, presents findings from a field experiment in which police strategies were implemented in defined geographic areas during specific periods to measure potential displacement and diffusion effects. Three target areas were examined, representing property, violent, and consensual crime hot spots. The session reports findings on physical characteristics of places that may facilitate or obstruct the occurrence of displacement and diffusion.

Student Paper Winners

Mattie Silks

Presenters

Christopher K. Durso — **Carnegie Mellon University**

Estimation of Seasonality for Use in Crime Mapping
Reliable estimates of crime seasonality are valuable for law enforcement and crime prevention. Seasonality affects many police decisions, from long-term reallocation of uniformed officers across precincts to short-term targeting of patrols for hot spots. The vast literature on crime seasonality has almost exclusively examined crime data aggregations at the city or even larger scale. By contrast, this paper shows that crime seasonality is a small-scale, neighborhood-level phenomenon.

Greg Jones — **University of Maryland, College Park**

Using Spatial Analysis to Examine Displacement in an Urban Housing Development
This paper examines whether a public housing development affects crime in the area surrounding it. In 1999, the Charlotte Court housing development (Lexington, KY) was demolished, and 600 residents relocated. The research examines crime before and after the removal of the housing development, using call-for-service data in which a report was taken for specific crime types.

9:30 am - 10:00 am	Break

10:00 am - 11:30 am — **Concurrent Panels**

Showcase Session

Suite V/VI

Forecasting

Salon A/B

Presenters

Wilpen L. Gorr — **Carnegie Mellon University**

Crime Forecasting Update
(Wilpen L. Gorr, Jacqueline Cohen, Chris Durso)
The presenters' previous research on forecasting crime at the neighborhood level demonstrated the feasibility of such efforts with data from Pittsburgh, PA. The research found that one-month-ahead forecast errors from exponential smoothing methods were acceptable for hot spot areas and that the current month's soft crimes made promising leading indicators for forecasting the next month's hard crimes. The presenters' current work is to apply spatial econometric enhancements to forecast models and build a prototype forecasting package as an extension of crime mapping.

Brad J. Moore — **Ontario Provincial Police**

Preparing a Crime Prediction Profile
Geographic profiling applies a mathematical algorithm to a serial offender's crimes to determine where the offender is based. The Rigel geographic profiling software outputs a grid of cells, each of which contains a

value representing the relative probability that the offender lives within that cell. A crime prediction profile can be created by using those values as weighting and reapplying the CGT algorithm. In this study, the crime prediction methodology was not able to accurately predict the next crime location but had some success in predicting at least one of the next five crime locations.

Kevin J. Switala **Gannett Fleming**

Development of a Promising Residential Burglary-Forecasting Model
This paper describes the Philadelphia Police Department's continuing investigation of a promising residential burglary-forecasting model. This application assists in determining weekly geographic areas at the block level that are most susceptible to burglary. The resulting map of susceptibility gives commanding officers a valuable tool for more effective, proactive deployment of their resources.

Geographic Profiling II *Salon C/D*

Presenters

Ian Oldfield **Metropolitan Police Service**

Applying Spatial Profiling to Residential Burglary
This paper describes research in progress to examine the efficacy of spatial profiling techniques applied to volume crime—in particular, residential (house) burglaries in the United Kingdom. Using crime data from the London Metropolitan Police Service, the author has identified an initial batch of 700 offenses, involving 60 separate offenders, and is currently studying the spatial patterns to test the robustness of these methodologies: routine activity theory/rational choice theory, circle hypothesis, and spurious outlying data. Initial findings suggest useful possibilities for volume crime analysts.

Mark W. Patterson **Kennesaw State University**

Crime Modeling Using Discriminant Analysis and GIS
This research integrates statistical analysis and GIS to develop a model to predict crime. Using a statistical technique called discriminant analysis, four UCR Part I crimes for the city of Atlanta (robbery, murder, aggravated assault, and burglary) were individually examined in conjunction with eight socioeconomic variables and four environmental variables. The resulting function scores were mapped using GIS to uncover spatial patterns, and prediction rates for each crime were computed by discriminant analysis and plotted on a map. Overall prediction rates were: murder, 81 percent; aggravated assault, 57 percent; burglary, 67 percent; and robbery, 73 percent.

GIS Applications III *Salon G/H*

Presenters

Robert W. Donlin **National Law Enforcement and Corrections Technology Center**

Mapping for Prisons
This presentation examines the application of GIS principles to correctional institutions. It demonstrates a system called SCORMAP, which is being developed by the National Law Enforcement and Corrections Technology Center–Southeast using data from institutions located in that region. The system is designed as an information gathering and analysis tool, not as a means of keeping track of the daily movements of an inmate.

Karen L. Vincent — **Hayward Police Department**

Digital Orthophotography and Adobe Products for Crime Analysis Problem Solving
Adobe products, such as Photoshop and Illustrator, can be used with orthophotography to provide efficient solutions to crime analysis problems. Photoshop provides tools that can be used to enhance school safety initiatives and to increase the clarity of crime scene maps in complicated incidents. Especially in situations where time is short, Photoshop and Illustrator provide a fast and effective means to adjust orthophotography to meet the needs of school safety planning and crime scene illustration.

Other Disciplines/Similar Methods

Salon I/J

Presenters

Budhendra L. Bhaduri — **Oak Ridge National Laboratory**

Advanced Geographic Analysis with a High-Resolution Population Distribution Model
(Budhendra Bhaduri, Edward Bright, Phil Coleman)
U.S. census blocks assume a uniform population distribution, yet that distribution leads to overestimated or underestimated analytical results. The LandScan Global Population Model developed at Oak Ridge National Laboratory uses GIS and remote sensing data and technologies through a dasymetric modeling approach to overcome that limitation. Further, the development of nighttime and daytime population distribution models allows visualization of the dynamics of regional population movement.

Susan J. Boyd — **National Institutes of Health**

Arrests Around Methadone Clinics: Does Time of Day Make a Difference?
Communities often resist the establishment of treatment programs within their neighborhoods due to concerns that crime might increase. This study looks at 11 urban fixed-site methadone treatment programs (FMTPs) and examines where arrests occurred (near or far from FMTPs) and when they occurred (during or outside clinic dosing hours). Similar analyses are made of arrests around hospitals and convenience stores. The presentation demonstrates how GIS mapping techniques can provide empirical data on this problem and lead to informed public policy.

Ned Levine — **Ned Levine & Associates**

Motor Vehicle Crash Analysis
This session examines the similarities and differences between motor vehicle crash analysis and crime analysis. Similarities include the occurrence of the phenomena at unique locations, the use of police departments to collect and archive data, the concentration of crashes in small clusters (hot spots), the existence of temporal variations in incidence, the use of similar analytical tools, and intervention through targeting of both offenders and locations. Differences include degree of concentration and predictability of temporal-spatial patterns.

Spatial Research II

Suite IV

Presenters

Erika Poulsen — **Rutgers University**

Using GIS to Measure the Relationship between Segregation and Isolation with Robbery Locations

This presentation focuses on how GIS was used to measure the relationship between levels of residential segregation and isolation with robbery location. An explanation is provided on using the index of dissimilarity to measure unevenness and the Lieberson P* index to measure isolation. The session also describes the relationship between the distribution of robbery and the distribution of the unevenness and isolation within three cities.

Caterina Gouvis Roman — **The Urban Institute**

Theory and Practice: Assessing the Capacity of Community Organizations and Institutions

The Urban Institute is developing and validating a strategy for measuring community institutional capacity and its role as a key component of social capital. Such a tool can be used by communities, policymakers, funders, and researchers to track neighborhood changes and assess progress toward neighborhood health and community well-being. The measure is packaged as an Access database linked to a GIS. The session will address the development of the community capacity measure, the theory being tested, ways in which GIS was used to define key variables within the measure, and the utility of the measure.

Victimization

Mattie Silks

Moderator

Angela Moore Parmley — **U.S. Department of Justice**

Presenters

Daniel B. Bibel — **Massachusetts State Police**

Repeat Victimization of Addresses: Predictive and Policy Implications for Police

(Daniel B. Bibel, Donald Faggiani)

Studies in the United Kingdom show that repeat address victimizations account for a disproportional share of total victimizations, but the United States has yet to capitalize on the benefits of such research. This session examines the differential characteristics of locations that experienced repeat burglaries in the period 1999-2001, using data from an enhanced version of the FBI's National Incident Based Reporting System. The purpose is to determine whether there is predictive utility in the examination of the characteristics of both locations and incidents. The policy implications for law enforcement agencies may prove useful either in creating new preventive patrol strategies or in developing information that can be distributed to the public.

Derek J. Paulsen — **Eastern Kentucky University**

Assessing Spatial Aspects of Child Maltreatment Victimization

Little is known about the spatial patterns of child maltreatment victimization. This research seeks to answer three important questions: (1) Are child maltreatment victimizations concentrated within certain parts of a city? (2) Are there different spatial patterns for child abuse, child neglect, and juvenile assault victimization locations? (3) How well does ecological theory explain the incidence of child abuse, child neglect, and juvenile assault victimization at the neighborhood level?

Jim Whittington **Minnesota Center for Crime Victim Services**

Mapping and the Strategic Planning Process
In 2001, the Minnesota Center for Crime Victim Services began an in-house process for strategic planning with the intention of developing a three-year service plan for victim services across the state. This presentation will outline the steps used to conduct information-gathering focus groups in the state's ten judicial districts. The groups included direct service providers, local law enforcement, the courts, county attorneys, community-based agencies and citizens at large. The presentation will demonstrate the use of mapping in providing information to the focus groups and how services can effectively be mapped to assist in the strategic planning process.

11:30 am - 1:00 pm Lunch on Your Own

Reentry

1:15 pm - 2:30 pm **Plenary Panel** ***Colorado Ballroom E/F***

Nancy La Vigne **The Urban Institute**

Mapping Prisoner Reentry: A Research Tool for Policy and Practice
Last year, over 600,000 inmates were released from state and federal prisons in the United States, presenting serious public safety and social service challenges in the communities to which they returned. Mapping and other forms of spatial analysis are useful for analyzing the nature of prisoner reentry, providing guidance for developing reentry-related programs and strategies, and assessing the impact of existing reentry programs. This presentation describes the reentry phenomenon, demonstrates the local context and spatial distribution of returning prisoners and resources available to them, and provides an overview of data sources and spatial analysis methods for understanding prisoner reentry.

2:30 pm - 3:00 pm Break

3:00 pm - 4:30 pm **Concurrent Panels**

Showcase Session *Suite V/VI*

Advanced Spatial Statistics *Salon A/B*

Presenters

Karen L. Hayslett-McCall **University of Texas at Dallas**

Neighborhoods, Land Use, and Crime Rates: A Test of Routine Activity Theory
Routine activity theory suggests that neighborhood-level activity patterns influence crime rates and that the convergence of a motivated offender, a suitable target, and the absence of a capable guardian results in the increased likelihood of criminal events. This paper asks which land uses have a direct influence on crime,

whether land uses mediate the effects of disadvantage on crime, and whether neighborhood social characteristics and land-use patterns interact to increase crime. The research uses census, tax parcel, and crime data from three cities.

Sanjeev Sridharan **Westat**

Advanced Spatial Statistics
This research uses exploratory and confirmatory spatial methods to study the linkages between county-level social support and crime rates. The project's approach integrates two theories of crime: routine activity and social disorganization. The research also uses the linkages between GIS software and methods of spatial econometrics, as well as spatial multilevel models.

CrimeStat Case Studies *Salon C/D*

Presenters

Bryan E. Hill **Glendale Police Department**

Correlated Walk Anaylsis (CWA): CrimeStat's Newest Analysis Tool
The CrimeStat® spatial statistics program, version 2.0, is freely available for use by crime analysts. It enables users to identify hot spots, an offender's home base (journey-to-crime analysis), standard deviation ellipses, standard deviation rectangles, and calculated centers, and it incorporates Spatial and Temporal Analysis of Crimes (STAC®). In addition, using Correlated Walk Analysis (CWA), the program attempts to calculate the location of a next hit in a crime series based on statistical calculations of time, distance, and bearing. This session explains how CWA has been used in the tactical analysis of crime in the Glendale, Arizona, Police Department.

Derek J. Paulsen **Eastern Kentucky University**

Using CrimeStat to Facilitate Research on the Geography of Social Control
Geography of social control is a topic of criminological research that focuses on the geographic separation of crime from the control of crime. This session focuses on using CrimeStat to determine if there is differential processing in the investigation and prosecution of homicide incidents. Specifically, are there certain areas of a city in which homicides are more likely to be cleared and murder charges are more likely to be filed? The presentation describes the use of Moran's I and Risk Adjusted Nearest Neighbor Hierarchical spatial clustering (Rnnh) to determine differential spatial patterns related to the geography of social control.

Gaston Pezzuchi **Buenos Aires Province Police Department**

Spatial Analysis of Police Confrontations in a Large Argentinean Urban Setting
(Gaston Pezzuchi, Jorge Hector Ortiz)
This session presents the results of a study of police "confrontations" (mostly gunfights) over the last three years in the 29 contiguous counties surrounding Buenos Aires, Argentina. The research examines each year's spatial distribution and hot spots for incidents and offenders' residences. It also depicts a journey-to-crime estimation in an attempt to explain offenders' behavior. The aggravated nature of these incidents shows an extreme level of resistance against law enforcement officers.

Cross-Jurisdictional Data Sharing

Salon G/H

Presenters

Linda A. Herb — **New York State Division of Criminal Justice Services**

Implementing a Cross-Jurisdictional Crime Mapping System in New York State
The New York State Division of Criminal Justice Services recently implemented a cross-jurisdictional crime mapping system for law enforcement agencies across the state. In December 2000, the system was completed and made operational in the pilot regions. This presentation addresses the challenges, obstacles, and successes of implementation in a real-life context. The presentation is intended for those in law enforcement who are contemplating a similar undertaking, as well as those who are now engaged in designing or running similar systems.

John Markovic — **Vera Institute of Justice**

Planning and Building a Cross-Jurisdictional Crime Mapping System for New York State
This presentation discusses the planning, design, and programming efforts made in bringing crime mapping capacities to law enforcement agencies in New York State. Topics include initial conceptualization; assessment of law enforcement agencies' interest, resources, and data quality; selection of pilot regions; use of a diverse design team; and delivery of a secure, extranet-based crime mapping system capable of cross-jurisdictional mapping. Separate presentations address how the system was operationally implemented in the field and how the law enforcement community in New York State is currently using it.

Penny Peters — **Oakland County**

Pulling It All Together: Data Sharing, Mapping, and Crime Analysis Across Multi-Jurisdictions
This session describes Oakland County's data sharing agreements with 50 local police agencies in four counties. It also covers aspects of the implementation of that major initiative, including planning, hardware, software, data, training, and support. In the system, data are exported from a legacy mainframe system to a robust data warehouse and then to a crime analysis tool deployed to each police agency across a wide-area network.

Data Sharing

Salon I/J

Presenters

Michael Barndt — **Nonprofit Center of Milwaukee**

Incorporating Children's Court Data into a Community Information System: A Case Study
This session describes a virtual information clearinghouse developed to serve community program, policy, and evaluation needs in Milwaukee neighborhoods. Topics include the process of gaining access to highly confidential information; the technical steps required to organize and develop useful maps and indicators from the data; the functional advantages of the resulting data in addressing the information needs of the court and the community; and the fit of such a data set within a larger community information system.

Julia B. Conley — **Winston-Salem Police Department**

Community Safety Problem-Solving with GIS in Winston-Salem, NC
In Winston-Salem, the Strategic Approaches to Community Safety Initiative has led to federal, state, city, and county partnerships and community support, which in turn have led to the development of the Center for Community Safety. The center integrates diverse community data sources for research-based strategies

to reduce and prevent violence. Through the groundwork of SACSI and the partnerships already established, the Winston-Salem Forsyth County School system was selected for the Winston-Salem/Police Foundation Safe Schools Partnership. The outcome is a safe schools mapping application to track crime and calls for service at schools and surrounding neighborhoods and walking zones.

Jim Pingel **City of Milwaukee**

Using Shared Data to Help Bridge the Gap: Lessons Learned from Milwaukee's COMPASS Project

COMPASS (Community Mapping, Planning and Analysis for Safety Strategies) is a data-driven approach for enhancing community safety through collaborative, proactive problem solving. This presentation discusses the Milwaukee COMPASS site's experiences in creating a shared data infrastructure that incorporates neighborhood-level data from a wide variety of governmental and community sources. It also describes data-collection strategies and tools used to overcome barriers to sharing information; Milwaukee's multi-tier model for data usage and dissemination; innovative applications to collect real-time data from residents and neighborhood groups; and applications of shared data to improve decision making in collaborative environments.

Maximizing the Impact of MAPS

Suite IV

Presenter

Jerry Ratcliffe **New South Wales Police College**

Maximizing Your Mapping Impact with Effective Use of Color and Presentation Skills

Many spatial crime analysts spend weeks working on a project only to see the impact of their efforts wasted through mediocre maps or poor presentations. This session guides crime mappers who might not have taken a cartography or presentation skills class. The first half of the session helps participants understand the way people see and perceive color and examines how that understanding can improve the clarity and impact of maps and graphics. The second half provides guidelines for combining text and graphical information into an intelligence briefing using PowerPoint.

Storing and Handling Spatial Data

Mattie Silks

Presenters

James E. Sitton **U.S. Department of Commerce**

GIS as Used by Federal Law Enforcement to Identify Organized Criminal Activity

In addressing organized crime, analysts and field agents used to rely on database linking and referencing. Now they can also examine the spatial realm and make new discoveries. This project demonstrates the key techniques and procedures used to identify organized criminal activity within a city radius. It also demonstrates different applications of choropleth and thematic mapping.

Paul Trudt **St. Louis County Police Department**

Building a GIS-Enabled Data Warehouse for Law Enforcement

The St. Louis County Police Department has created a data warehouse for crime analysis applications that integrates GIS technology. Through the use of Data Transformation Services, the department has imported RMS data, regional mug shot data, gang data, voter registration data, and property tax data into the warehouse. The data warehouse will interface with an existing geo-enabled Visual Basic interface to supply a spatial population of potential suspects based on previous known behavior (crime reports in the warehouse) and location, i.e., home address, work address, and incident address.

Wednesday, December 11, 2002

7:30 am - 12:00 pm **Registration** ***Pre-Function Area***

7:30 am - 12:00 pm **Vendor Exhibits** ***Suite I/II/III***

8:30 am - 10:00 am **Repeated Concurrent Panels**

Showcase Session *Suite V/VI*

Geographic Profiling I *Salon A/B*

Presenters

Richard Z. Gore **University of Massachusetts at Lowell**

Use and Effectiveness of Distance-Decay Curves and Incident Based Offender Residence Probability Surfaces in Ranking an Offender on a Randomly Generated Suspect List
(Richard Z. Gore, Kenneth V. Griffiths, Nicholas J. Tofiluk)
This presentation describes the results obtained by using simulation software designed to indirectly determine the predictive value inherent in the geographic information derived from arrest records. A simulated suspect list containing the perpetrator can be generated for any incident randomly drawn from the database, and geographic filters can be used or not. The results indicate a high utility value in the three geographic filters used. The study has implications for the formulation of administrative policies that prescribe the assembly and processing of suspect lists.

Brad J. Moore **Ontario Provincial Police**

Geographic Profiling
Geographic profiling is an investigative support technique for cases of serial violent crime. To determine the most probable areas in which the offender might reside or work, the process analyzes offense locations, characteristics of the neighborhoods in which they occurred, and the psychological profile of the offender. Geographic profiling is best understood as an information management strategy that can be used to prioritize suspects and locations and to suggest new investigative tactics when traditional methods have not been successful.

Christopher G. Mowbray **Edmonton Police Service**

Target Selection and Spatial Pattern Analysis of Serial Sexual Offenders in Edmonton, Canada
This study examines the spatial patterns of known stranger-stranger serial rapists who attacked their victims in Edmonton, Alberta, Canada. The theoretical underpinnings of this paper are found in journey-to-crime research, environmental criminology, environmental psychology, and other spatial or geography-based research. Analysis found that a small number of offenders (some "marauders," others "commuters") were responsible for an inordinate number of total offenses.

GIS Applications I

Salon C/D

Presenters

Donald R. Dixon — **California State University at Sacramento**

Hot Spots of Juvenile Violence: Using GIS to Understand Where and Who

This paper describes the use of ArcView 3.2 and the hot spot extension to assess patterns of juvenile violence over a five-year period in Dallas, TX. The data cover 1997 to 2001 and include arrests of juveniles for violent offenses. After hot spots were identified, the researcher conducted a social-ecological analysis of the areas where violent offenses by juveniles were most likely to occur and of the offenses themselves. Analysis of those patterns provides new insights into neighborhood and offender characteristics and makes possible more effective intervention, diversion, and education strategies.

Peter Schmitz — **CSIR**

Mapping Crime Levels Per Magisterial District in South Africa

(Peter Schmitz, Theo Stylianides)

South Africa is planning to right-size its courts in terms of service delivery and budget. To determine whether a court has enough resources to deal with the number of criminal cases in its jurisdiction, it was necessary to map the crime levels per magisterial district (a subdivision of a province). Police station boundaries were mapped and overlaid with magisterial boundaries. With SAS software, crime data from the South African Police Service was processed, and crime levels per magisterial district were calculated, imported into ArcView GIS, and mapped per magisterial district.

International Mapping

Salon G/H

Presenters

Jaishankar Karuppannan — **University of Madras**

Patterns of Crimes of Communal Violence and Terrorism in Coimbatore City: A GIS Analysis in India

(Jaishankar Karuppannan, Balamurugan Venkatesh)

This study examines two episodes of communal violence; one cost several lives and millions of rupees, and the other turned into communal terrorism, including bomb blasts that killed several people. GIS and spatial analysis were used to identify the relationships between population, land use, literacy, urbanization, and crimes of communal violence and terrorism. The study attempts to explain crimes of communal violence and terrorism and to discern policy-making implications to prevent such violence in the future.

Sean Sutter — **U.S. Department of State**

The Andean Connection: Illicit Crop Detection, Eradication, and Drug Interdiction in the Andean Region

This presentation showcases the GIS and remote sensing processes and equipment used by the U.S. Department of State, Bureau of International Narcotics and Law Enforcement, host nation law enforcement, and other agencies to detect and locate concentrations of illicit crops (particularly coca and poppy) for purposes of eradication and interdiction in South America. Multispectral imagery is obtained from various platforms to conduct spectral analysis and determine locations of large amounts of cultivation. Imagery is used for eradication mission planning and to determine the location of airfields and drug labs for interdiction mission planning.

Problem-Solving

Salon I/J

Presenters

Mark Patrick — **InfoTech Enterprises Europe**

Proving the SARA Model: A Problem-Solving Approach to Street Crime Reduction in the London Borough of Lewisham
Like many London boroughs, Lewisham has suffered an increasing street robbery problem. This paper describes how the SARA problem-solving methodology was implemented in Lewisham, linking spatial and temporal analysis directly to the design of crime reduction initiatives. The paper further discusses attempts to continually assess progress toward the goal and describes how the initiatives were modified in light of this continual analysis and reassessment.

Thomas F. Rich — **Abt Associates Inc.**

Problem-Solving in K-12 Schools Using School COP
With NIJ funding, Abt Associates developed the School Crime Operations Package (School COP), a software package that enables school safety officers or school administrators to enter, maintain, analyze, and map school rule violations and crimes in and around schools. The application is available for free at www.schoolcopsoftware.com. This presentation provides an overview of School COP, describes the approach used to map incidents in schools, and discusses how School COP has been used as a problem-solving tool in K-12 schools.

Rare Events

Suite IV

Presenters

Avinash Singh Bhati — **The Urban Institute**

Robust Spatial Analysis of Rare Crimes: Modeling Disaggregated Homicide Rates
In recent years, analysis of disaggregated homicide rates has led to a deeper understanding of the differential mechanisms leading to the generation of different "types" of homicides. Likewise, inclusion of a spatial dimension to homicide research has offered insights into the spatial dynamics of violent crime. This presentation applies new information-theoretic estimation methods to the problem of allowing spatial error-correlation in models of rare crimes, i.e., models with discrete (binary or count) outcomes such as disaggregated homicide rates measured at local (intra-city) units of spatial aggregation. The session explains the methodology and presents preliminary findings.

Kenneth Johnson — **Seattle Police Department**

Poisson Regression and GIS for Analysis of Crime Activity
Because the worst crimes occur in small numbers, the need for a better statistical mousetrap suggests use of logistic regression, a far cry from Ordinary Least Squares (OLS) methods. The concept of maximum likelihood comes into play when dealing with logit-based analyses. This session explores Poisson regression, the goal of which is to develop a predictive model that pulls out statistically valid predictor variables. The giant step that remains is whether that set of variables can be used for further identification of highly likely crime activity areas.

Victimization

Mattie Silks

Moderator

Angela Moore Parmley — **U.S. Department of Justice**

Presenters

Daniel B. Bibel — **Massachusetts State Police**

Repeat Victimization of Addresses: Predictive and Policy Implications for Police

(Daniel B. Bibel, Donald Faggiani)

Studies in the United Kingdom show that repeat address victimizations account for a disproportional share of total victimizations, but the United States has yet to capitalize on the benefits of such research. This session examines the differential characteristics of locations that experienced repeat burglaries in the period 1999-2001, using data from an enhanced version of the FBI's National Incident Based Reporting System. The purpose is to determine whether there is predictive utility in the examination of the characteristics of both locations and incidents. The policy implications for law enforcement agencies may prove useful either in creating new preventive patrol strategies or in developing information that can be distributed to the public.

Derek J. Paulsen — **Eastern Kentucky University**

Assessing Spatial Aspects of Child Maltreatment Victimization

Little is known about the spatial patterns of child maltreatment victimization. This research seeks to answer three important questions: (1) Are child maltreatment victimizations concentrated within certain parts of a city? (2) Are there different spatial patterns for child abuse, child neglect, and juvenile assault victimization locations? (3) How well does ecological theory explain the incidence of child abuse, child neglect, and juvenile assault victimization at the neighborhood level?

Jim Whittington — **Minnesota Center for Crime Victim Services**

Mapping and the Strategic Planning Process

In 2001, the Minnesota Center for Crime Victim Services began an in-house process for strategic planning with the intention of developing a three-year service plan for victim services across the state. This presentation will outline the steps used to conduct information-gathering focus groups in the state's ten judicial districts. The groups included direct service providers, local law enforcement, the courts, county attorneys, community-based agencies and citizens at large. The presentation will demonstrate the use of mapping in providing information to the focus groups and how services can effectively be mapped to assist in the strategic planning process.

10:00 am - 10:30 am — **Break**

Homeland Security

10:30 am - 11:45 am **Plenary Panel** ***Colorado Ballroom E/F***

Moderator

Rachel L. Boba — **Police Foundation**

Presenters

Brian Lantz — **MapInfo Corporation**

Mapping Out Disasters and Emergencies Using Location Intelligence
To ensure operational continuity in a disaster, governments now recognize the need to share information (particularly spatial information) rapidly, efficiently, and economically. This session examines the strategic activities required for success, such as centralizing spatial database management, leveraging databases to manage spatial data, visualizing spatial data, applying location intelligence, and sharing information. The session also highlights the use of location-based technology by government and law enforcement agencies, such as the Federal Emergency Management Agency and the New York Police Department, to prevent, prepare for, and assist in the recovery of natural and man-made disasters.

Lew Nelson — **Environmental Systems Research Institute**

ESRI and Homeland Security
This session describes ESRI's work, development, and offerings for homeland security and community safety. ESRI is a company that provides GIS solutions.

Richard Matthew Tate — **Intergraph Mapping and GIS Solutions**

Spatial Assistance in Homeland Security
The ability to interoperate within different data types is key to a successful homeland security application. The Office or (perhaps) Department of Homeland Security will need to formulate a strategy for integrating local, county, state, and federal geospatial data to form the National Spatial Data Infrastructure. One of its benefits will be to provide spatial pictures to assist first responders in a crisis. This paper identifies how the geospatial community can provide the necessary functionality to provide "spatial assistance."

11:45 am - 12:00 pm **Closing Remarks** ***Colorado Ballroom E/F***

Debra A. Stoe — **U.S. Department of Justice**